Remarks

This application has been reviewed in light of the Final Office Action of June 18, 2007. Claims 15-23 are pending, and all claims are rejected. In response, the following remarks are submitted.

Ground 1. Claims 15-23 are rejected under 35 USC 103 as unpatentable over Henry U.S. Patent 4,388,124. Applicant traverses this ground of rejection.

The following principle of law applies to all §103 rejections. MPEP 2143.03 provides "To establish prima facie obviousness of a claimed invention, all claim limitations must be taught or suggested by the prior art. In re Royka, 490 F2d 981, 180 USPQ 580 (CCPA 1974). All words in a claim must be considered in judging the patentability of that claim against the prior art. In re Wilson, 424 F.2d 1382, 1385, 165 USPQ 494, 496 (CCPA 1970)." [emphasis added] That is, to have any expectation of rejecting the claims over a single reference or a combination of references, each limitation must be taught somewhere in the applied prior art. If limitations are not found in any of the applied prior art, the rejection cannot stand. In this case, the single applied prior art reference clearly does not arguably teach some limitations of the claims.

The present invention is directed to a "method for selecting a reduced-cost nickel-base superalloy." It requires first "identifying a baseline nickel-base superalloy", and then "selecting a modified nickel-base superalloy" derived from the composition modified nickel-base superalloy. That is, the method involves first identifying the baseline nickel-base superalloy, and then modifying its composition to reach the "modified nickel-base superalloy." The objective, as discussed in the Specification, is to reduce the amount of the high-cost tantalum alloying element.

Henry teaches alloy compositions but not, as far as Applicant can tell, a "method for selecting a reduced-cost nickel-base superalloy" as recited in claims 15-19.

Each of claims 15 and 19 recites in part:

> "selecting a modified nickel-base superalloy having a nominal composition, in weight percent, comprising
>
> a modified tantalum content at least 1.5 weight percent less than the baseline tantalum content, and

a modified baseline sum of (modified hafnium content plus modified columbium content plus modified titanium content plus modified tungsten content) at least 1.5 weight percent greater than the baseline sum."

The explanation of the rejection, at page 4, lines 1-4, references compositions taught by Henry in the Abstract and in the Table found in column 4. The explanation of the rejection asserts (page 2, last 2 lines on page) that "Henry teaches a nickel-base superalloy having a composition that overlaps the nickel base superalloy recited in the instant claims." The claims do not recite a nickel-base superalloy composition, they recite a method for selecting a reduce-cost nickel-base superalloy.

The claims instead are to a method of designing an alloy starting with a baseline alloy, which Henry does not address at all. In re Peterson and related composition-claim cases have no application here.

Further, the claim recites compensating for the decrease in tantalum content by increasing a specific combination of other elements "sum (hafnium content plus columbium content plus titanium content plus tungsten content)." What the inventors found is that expensive tantalum can be replaced with these less expensive elements while achieving comparable performance (Specification, para. [0007]). Henry has nothing to do with that.

The explanation of the rejection admits that the recited steps are not taught by the art.

In the remarks of the prior Amendment, Applicant asked that the Examiner indicate the specific location in Henry where the steps of identifying and selecting are taught, and exactly what is the "baseline nickel-base superalloy" composition taught by Henry. The Response to Arguments acknowledges this request at the bottom of page 5 of the Final Office Action, but does not identify any location.

On page 6 of the Final Office Action, there is a discussion of the references, and an identification of the alloys in the references that are said to be the "baseline nickel-base superalloy" in each case. Applicant asks that the Examiner identify in the Advisory Action exactly which alloy in Henry is said to be the "modified nickel-base superalloy."

Ground 2. Claims 15-23 are rejected under 35 USC 103 as unpatentable over Darolia U.S. Patent 6,444,057 or Tamaki U.S. Patent 6,051,083, each reference taken by itself. Applicant traverses this ground of rejection.

The issue here for each of the references is substantially the same as for the Ground 1 rejection. The discussion of the Ground 1 rejection is incorporated, except modified to address the teachings of Darolia and Tamaki.

The present invention is directed to a "method for selecting a reduced-cost nickel-base superalloy." It requires first "identifying a baseline nickel-base superalloy," and then "selecting a modified nickel-base superalloy" derived from the composition modified nickel-base superalloy. That is, the method involves first identifying the baseline nickel-base superalloy, and then modifying its composition to reach the "modified nickel-base superalloy." The objective, as discussed in the Specification, is to reduce the amount of the high-cost tantalum alloying element.

Each of the references teaches alloy compositions but not, as far as Applicant can tell, a "method for selecting a reduced-cost nickel-base superalloy" as recited in claims 15-19.

Each of claims 15 and 19 recites in part:

> "selecting a modified nickel-base superalloy having a nominal composition, in weight percent, comprising
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> a modified tantalum content at least 1.5 weight percent less than the baseline tantalum content, and
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> a modified baseline sum of (modified hafnium content plus modified columbium content plus modified titanium content plus modified tungsten content) at least 1.5 weight percent greater than the baseline sum."

The explanation of the rejection, at page 4, lines 6-13, references compositions taught by Darolia at col. 1, lines 54-59 and Tamaki at col. 1, lines 6-15. The explanation of the rejection asserts that "Each of the references teaches a single crystal nickel base superalloy...having a composition that overlaps the instantly claimed alloy." The present claims do not recite a nickel-base superalloy composition, or any composition for that matter.

The claims instead are to a method of designing an alloy starting with a baseline alloy, which the references do not address at all. In re Peterson and related composition-claim cases have no application here.

Further, the claim recites compensating for the decrease in tantalum content by increasing a specific combination of other elements "sum (hafnium content plus columbium

content plus titanium content plus tungsten content)." What the inventors found is that expensive tantalum can be replaced with these less expensive elements while achieving comparable performance (Specification, para. [0007]). Neither of the references has anything to do with that.

In the remarks of the prior Amendment, Applicant asked that the Examiner indicate the specific location in Henry where the steps of identifying and selecting are taught, and exactly what are the "baseline nickel-base superalloy" compositions taught by the references. The Response to Arguments acknowledges this request at the bottom of page 5 of the Final Office Action, but does not identify any location.

On page 6 of the Final Office Action, there is a discussion of the references, and an identification of the alloys in the references that are said to be the "baseline nickel-base superalloy" in each case. Applicant asks that the Examiner identify in the Advisory Action exactly which alloy in each of the references is said to be the "modified nickel-base superalloy."

Both rejections proceed on the mistaken notion that the present claims recite alloy compositions. They of course do not. What they recite is methods for selecting modified alloys by starting at a baseline composition and then modifying the baseline in specifically recited ways. That the example provided in the present Specification of each case happens to be close to the compositions disclosed in a prior art reference does not suggest in any way that the prior art reference teaches the method for selecting alloys recited in the present claims. None of the three references explains that the disclosed alloys were selected by a method as recited in the present claims. They may have been selected by experimental studies, discussions between inventors, or other techniques. But the references do not teach that they were selected by the process recited in the present claims, as the explanations of the rejections admit.

Despite the recurring references to In re Peterson, this quotation is not pertinent, because it relates only to motivation and selecting a specific optimum percentage within a range in a composition claim. In re Peterson does not in any way suggest that the method by which the scientist reaches an optimal result is not patentable.

Applicant submits that the application is in condition for allowance, and requests such allowance.

CONCLUSION

For at least the reasons set forth above, Applicant respectfully requests reconsideration of the Application and withdrawal of all outstanding rejections. Applicant respectfully submits that the claims are not rendered obvious in view of the cited art and thus, are in condition for allowance. Applicant requests allowance of all pending claims in a timely manner. If the Examiner believes that prosecution of this Application could be expedited by a telephone conference, the Examiner is encouraged to contact the Applicant's undersigned representative.

This Response has been filed within two (2) months of the mailing date of the Final Office Action and it is believed that no fees are due with the filing of this paper. In the event that Applicant is mistaken in these calculations, the Commissioner is hereby authorized to deduct any fees determined by the Patent Office to be due from the undersigned's Deposit Account No. 50-1059.

Respectfully submitted,

Dated: July 19, 2007

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